

=> d his ful

(FILE 'HOME' ENTERED AT 12:50:21 ON 04 NOV 2009)

FILE 'HCAPLUS' ENTERED AT 12:50:51 ON 04 NOV 2009

L1           1 SEA SPE=ON   ABB=ON   PLU=ON   US20080226986/PN  
               D L1 ALL  
               SAV L1 KWA517/A  
               SEL L1 RN

FILE 'REGISTRY' ENTERED AT 12:52:01 ON 04 NOV 2009

L2           8 SEA SPE=ON   ABB=ON   PLU=ON   (28408-24-4/BI OR 28408-25-5/  
               BI OR 7429-90-5/BI OR 7439-93-2/BI OR 7440-44-0/BI OR  
               7782-42-5/BI OR 863184-63-8/BI OR 863184-65-0/BI)  
               D SCA  
               SAV L2 KWA517A/A

FILE 'LREGISTRY' ENTERED AT 12:56:38 ON 04 NOV 2009

L3           STR  
 L4           STR

FILE 'REGISTRY' ENTERED AT 13:03:11 ON 04 NOV 2009

L5           50 SEA SSS SAM L4

FILE 'LREGISTRY' ENTERED AT 13:04:13 ON 04 NOV 2009

L6           STR L4

FILE 'REGISTRY' ENTERED AT 13:25:09 ON 04 NOV 2009

L7           50 SEA SSS SAM L6  
               D QUE STAT L7  
               D QUE STAT L5

FILE 'LREGISTRY' ENTERED AT 13:27:15 ON 04 NOV 2009

L8           STR L6

FILE 'REGISTRY' ENTERED AT 13:39:33 ON 04 NOV 2009

L9           50 SEA SSS SAM L8  
 L10          14238 SEA SSS FUL L8  
 L11          4 SEA SPE=ON   ABB=ON   PLU=ON   L10 AND L2  
               SAV L10 KWA517C/A

FILE 'LREGISTRY' ENTERED AT 13:42:35 ON 04 NOV 2009

L12          STR L8  
 L13          SCR 2040

L14            6 SEA SUB=L10 SSS SAM L12 AND L13  
              D SCA

L15            237 SEA SUB=L10 SSS FUL L12 AND L13

L16            FILE 'HCAPLUS' ENTERED AT 13:47:00 ON 04 NOV 2009  
              222 SEA SPE=ON ABB=ON PLU=ON L15

L17            FILE 'ZCAPLUS' ENTERED AT 13:47:29 ON 04 NOV 2009  
              QUE SPE=ON ABB=ON PLU=ON ?CATHODE?

L18            FILE 'HCAPLUS' ENTERED AT 13:47:43 ON 04 NOV 2009  
              3 SEA SPE=ON ABB=ON PLU=ON L16 (L) L17

L19            FILE 'ZCAPLUS' ENTERED AT 13:48:03 ON 04 NOV 2009  
              QUE SPE=ON ABB=ON PLU=ON ?NITROXYL?

L20            FILE 'HCAPLUS' ENTERED AT 13:48:20 ON 04 NOV 2009  
L21            11 SEA SPE=ON ABB=ON PLU=ON L16 (L) L19  
              3 SEA SPE=ON ABB=ON PLU=ON L16 AND L17

L22            FILE 'ZCAPLUS' ENTERED AT 13:49:16 ON 04 NOV 2009  
              QUE SPE=ON ABB=ON PLU=ON BATTERY# OR BATTERIES#

L23            FILE 'HCAPLUS' ENTERED AT 13:49:33 ON 04 NOV 2009  
L24            3 SEA SPE=ON ABB=ON PLU=ON L16 (L) L22  
L25            4 SEA SPE=ON ABB=ON PLU=ON L16 AND L22  
              12 SEA SPE=ON ABB=ON PLU=ON L24 OR L23 OR L21 OR L20 OR  
              L18

              FILE 'LREGISTRY' ENTERED AT 13:51:44 ON 04 NOV 2009

L26            FILE 'HCAPLUS' ENTERED AT 13:54:17 ON 04 NOV 2009  
L27            45 SEA SPE=ON ABB=ON PLU=ON L11  
              44 SEA SPE=ON ABB=ON PLU=ON L26 NOT L25

L28            FILE 'ZCAPLUS' ENTERED AT 13:56:02 ON 04 NOV 2009  
              QUE SPE=ON ABB=ON PLU=ON ?CARBON? (3A) ?CONDUCT?

L29            FILE 'HCAPLUS' ENTERED AT 13:56:27 ON 04 NOV 2009  
L30            0 SEA SPE=ON ABB=ON PLU=ON L16 AND L28  
L31            41 SEA SPE=ON ABB=ON PLU=ON L16 AND L19  
L32            8 SEA SPE=ON ABB=ON PLU=ON L30 (3A) ?POLYMER?  
              8 SEA SPE=ON ABB=ON PLU=ON L31 NOT L25

10/597,517

FILE 'LREGISTRY' ENTERED AT 13:59:33 ON 04 NOV 2009

FILE HOME

FILE HCAPLUS

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FILE COVERS 1907 - 4 Nov 2009 VOL 151 ISS 19

FILE LAST UPDATED: 3 Nov 2009 (20091103/ED)

REVISED CLASS FIELDS (/NCL) LAST RELOADED: Aug 2009

USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Aug 2009

HCPlus now includes complete International Patent Classification (IPC) reclassification data for the third quarter of 2009.

CAS Information Use Policies apply and are available at:

<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

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FILE REGISTRY

Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 2 NOV 2009 HIGHEST RN 1190920-68-3

DICTIONARY FILE UPDATES: 2 NOV 2009 HIGHEST RN 1190920-68-3

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TSCA INFORMATION NOW CURRENT THROUGH June 26, 2009.

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REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

FILE LREGISTRY  
LREGISTRY IS A STATIC LEARNING FILE

CAS INFORMATION USE POLICIES, ENTER HELP USAGETERMS FOR DETAILS.

FILE ZCAPLUS

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FILE COVERS 1907 - 4 Nov 2009 VOL 151 ISS 19  
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CAS Information Use Policies apply and are available at:

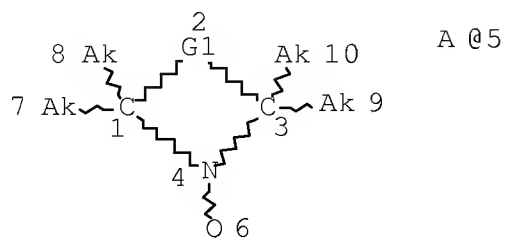
<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

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10/597,517

=> d que stat l10  
L8 STR



REP G1=(2-4) 5  
NODE ATTRIBUTES:  
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DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

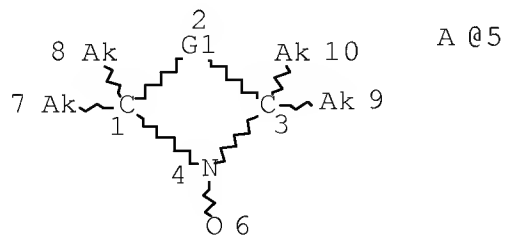
GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE  
L10 14238 SEA FILE=REGISTRY SSS FUL L8

100.0% PROCESSED 420233 ITERATIONS  
SEARCH TIME: 00.00.17

14238 ANSWERS

=> d que stat l15  
L8 STR



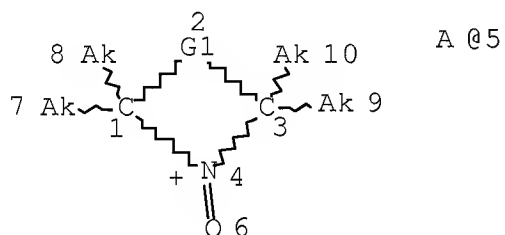
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NODE ATTRIBUTES:

10/597,517

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DEFAULT ECLEVEL IS LIMITED

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RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE  
L10 14238 SEA FILE=REGISTRY SSS FUL L8  
L12 STR



REP G1=(2-4) 5  
NODE ATTRIBUTES:  
CHARGE IS \*+ AT 4  
CONNECT IS E1 RC AT 6  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE  
L13 SCR 2040  
L15 237 SEA FILE=REGISTRY SUB=L10 SSS FUL L12 AND L13

100.0% PROCESSED 318 ITERATIONS 237 ANSWERS  
SEARCH TIME: 00.00.01

=> d l25 1-12 bib abs hitstr hitind  
YOU HAVE REQUESTED DATA FROM FILE 'HCAPLUS' - CONTINUE? (Y)/N:y

L25 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
AN 2008:81515 HCAPLUS Full-text  
DN 148:284662  
TI Carbon-carbon bond activation of  
2,2,6,6-tetramethyl-piperidine-1-oxyl by a RhII metalloradical: a  
combined experimental and theoretical study  
AU Chan, Kin Shing; Li, Xin Zhu; Dzik, Wojciech I.; de Bruin, Bas  
CS Department of Chemistry, The Chinese University of Hong Kong,  
Shatin, New Territories, Hong Kong, Peop. Rep. China  
SO Journal of the American Chemical Society (2008), 130(6), 2051-2061  
CODEN: JACSAT; ISSN: 0002-7863  
PB American Chemical Society  
DT Journal  
LA English  
OS CASREACT 148:284662  
AB Reaction of the stable radical,  
2,2,6,6-tetramethyl-piperidine-1-oxyl with Rh(II) meso-  
tetramesitylporphinate proceeds mainly as C-C-bond activation (CCA)  
and Me transfer, giving methylrhodium(III) porphinate and 2,2,6-  
trimethyl-2,3,4,5-tetrahydropyridine N-oxide. A competitive minor  
carbon-hydrogen bond activation (CHA) channel produces 1-hydroxy-  
2,2,6,6-tetramethylpiperidine (TEMPOH). The yield of the CCA product  
[RhIII(tmp)Me] increased with higher temperature at the cost of the  
CHA product TEMPOH in the temperature range 50-80°. Both the CCA and  
CHA pathways follow second-order kinetics. The mechanism of the  
TEMPO carbon-carbon bond activation was studied by means of kinetic  
investigations and DFT calcns. Broken symmetry, unrestricted B3LYP  
calcns. along the open-shell singlet surface reveal a low-energy  
transition state (TS1) for direct TEMPO Me radical abstraction by the  
RhII radical (SH2 type mechanism). An alternative ionic pathway,  
with a somewhat higher barrier, was identified along the closed-shell  
singlet surface. This ionic pathway proceeds in two sequential  
steps: Electron transfer from TEMPO to [RhII(por)] producing the  
[TEMPO]+[RhI(por)]- cation-anion pair, followed by net CH3+ transfer  
from TEMPO+ to RhI with formation of [RhIII(por)Me] and (DMPO-like)  
2,2,6-trimethyl-2,3,4,5-tetrahydro-1-pyridiniumolate. The transition  
state for this process (TS2) is best described as an SN2-like  
nucleophilic substitution involving attack of the dz2 orbital of  
[RhI(por)]- at one of the CMe-Cring  $\sigma^*$  orbitals of [TEMPO]+.  
Although the calculated barrier of the open-shell radical pathway is  
somewhat lower than the barrier for the ionic pathway, R-DFT and U-  
DFT are not likely comparatively accurate enough to reliably  
distinguish between these possible pathways. Both the radical (SH2)  
and the ionic (SN2) pathway have barriers which are low enough to  
explain the exptl. kinetic data.  
IT 1007605-39-1

RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)

(kinetics and potential energy surface for Me and hydride transfer reactions of TEMPO nitroxyl radical and rhodium porphinato complexes)

RN 1007605-39-1 HCAPLUS

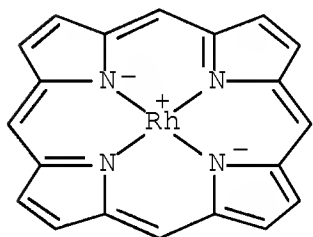
CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo-,  
(SP-4-1)-[21H,23H-porphinato(2-)-  
κN21,κN22,κN23,κN24]rhodate(1-) (1:1) (CA  
INDEX NAME)

CM 1

CRN 1007605-38-0

CMF C20 H12 N4 Rh

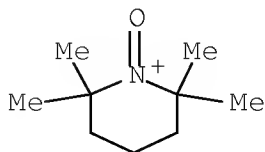
CCI CCS



CM 2

CRN 45842-10-2

CMF C9 H18 N O





CC 22-4 (Physical Organic Chemistry)  
 Section cross-reference(s): 26, 29, 78

IT 956578-75-9, Rhodium porphinate 1007605-36-8 1007605-37-9  
 1007605-39-1  
 RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)  
 (kinetics and potential energy surface for Me and hydride transfer reactions of TEMPO nitroxyl radical and rhodium porphinato complexes)

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

RE.CNT 82 THERE ARE 82 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2007:1009278 HCAPLUS Full-text

DN 148:466171

TI Radical-scavenging activity of nitroxyl radical as an electron donor

AU Manda, S.; Kawaguchi, K.; Ohkubo, K.; Kawashima, T.; Kanazawa, H.; Takeshita, K.; Anzai, K.; Ozawa, T.; Fukuzumi, S.; Ikota, N.; Nakanishi, I.

CS Heavy-Ion Radiobiology Research Group, Research Center for Charged Particle Therapy, National Institute of Radiological Sciences, Inage-ku, Chiba, 263-8555, Japan

SO Proceedings of the Congress of the Society for Free Radical Research International, 13th, Davos, Switzerland, Aug. 15-19, 2006 (2006), 237-239 Publisher: Monduzzi Editore, Bologna, Italy.  
 CODEN: 69JTC5; ISBN: 88-7587-274-0

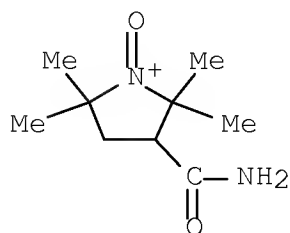
DT Conference

LA English

AB Cumylperoxyl radical (PhCMe200•), generated under irradiation of a propionitrile solution of cumene, di-tert-Bu peroxide, and O2 at 193 K, was efficiently scavenged by 3-carbamoyl-2,2,5,5-tetramethylpyrrolidine- N-oxyl (CP), a frequently used spin probe for in vivo ESR measurements. The scavenging rate is found to be accelerated in the presence of Sc(OSO2CF3)3, indicating that CP scavenges PhCMe200• via an electron transfer from CP to PhCMe200• rather than via a radical-coupling reaction. The coordination of Sc3+ to PhCMe200- thus produced decreases the free energy change of the electron transfer, resulting in the acceleration of the scavenging reaction.

IT 46147-12-0  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (radical-scavenging activity of nitroxyl radical as an electron donor)

RN 46147-12-0 HCAPLUS  
 CN Pyrrolidinium, 3-(aminocarbonyl)-2,2,5,5-tetramethyl-1-oxo- (CA  
 INDEX NAME)



CC 9-5 (Biochemical Methods)  
 Section cross-reference(s): 6, 8  
 IT 4399-80-8 7175-54-4 ~~46147-12-0~~  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (radical-scavenging activity of nitroxyl radical as an  
 electron donor)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2007:701897 HCAPLUS Full-text  
 DN 147:98690  
 TI Separator-less thin power storage devices with high performance  
 IN Morioka, Yukiko; Suguro, Masahiro; Iriyama, Jiro; Iwasa, Shigeyuki  
 PA Nec Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 25pp.  
 CODEN: JKXXAF

DT Patent  
 LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007165054	A	20070628	JP 2005-357932	20051212

PRAI JP 2005-357932 20051212

AB The title device has a ~~cathode~~ containing a nitroxyl macromol. which shows cationic nitroxyl moiety =N+=O (I) in oxidation state and radical nitroxyl moiety +N-O• (II) in reduction state for donating and accepting electrons between I and II in ~~cathode~~ reaction, an

anode containing a Li or Li alloy active mass, and a cathode current collector composed of a metal sheet and a conductivity-improving layer containing materials with hole-transporting group and electron-transporting group. The cathode is directly in contact with the anode. The device has high capacity in high c.d. and high output.

IT 942407-93-4

RL: TEM (Technical or engineered material use); USES (Uses)  
(cathode material; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

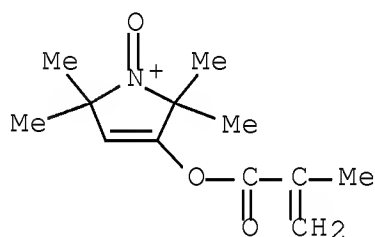
RN 942407-93-4 HCAPLUS

CN 1H-Pyrrolidium, 2,5-dihydro-2,2,5,5-tetramethyl-3-[(2-methyl-1-oxo-2-propen-1-yl)oxy]-1-oxo-, homopolymer (CA INDEX NAME)

CM 1

CRN 942407-92-3

CMF C12 H18 N O3



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST separatorless thin power storage device nitroxyl macromol

cathode; battery nitroxyl macromol cathode

lithium anode

IT Battery anodes

Battery cathodes

Secondary batteries

(separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

IT 7439-93-2, Lithium, uses 53680-59-4 68848-64-6

RL: TEM (Technical or engineered material use); USES (Uses)  
(anode active mass; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

IT 28408-25-5 942407-93-4

RL: TEM (Technical or engineered material use); USES (Uses)

(cathode material; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

IT 7429-90-5, Aluminum, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (current collector substrate; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

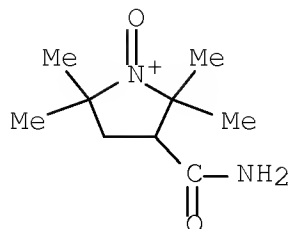
IT 15082-28-7 163226-12-8  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (electron-transporting material; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

IT 123847-85-8 942407-94-5  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (hole-transporting material; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

L25 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2007:340260 HCAPLUS Full-text  
 DN 146:521349  
 TI Scandium ion-accelerated scavenging reaction of cumylperoxyl radical by a cyclic nitroxyl radical via electron transfer  
 AU Nakanishi, Ikuo; Kawaguchi, Kumiko; Ohkubo, Kei; Kawashima, Tomonori; Manda, Sushma; Kanazawa, Hideko; Takeshita, Keizo; Anzai, Kazunori; Ozawa, Toshihiko; Fukuzumi, Shunichi; Ikota, Nobuo  
 CS Redox Regulation Research Group, Research Center for Radiation Safety, National Institute of Radiological Sciences (NIRS), Inage-ku, Chiba, 263-8555, Japan  
 SO Chemistry Letters (2007), 36(3), 378-379  
 CODEN: CMLTAG; ISSN: 0366-7022  
 PB Chemical Society of Japan  
 DT Journal  
 LA English  
 AB A cyclic nitroxyl radical used as a spin probe efficiently scavenges cumylperoxyl radical in an aprotic medium via an electron-transfer process, which is significantly accelerated by the presence of scandium ion.

IT 46147-12-0  
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)  
 (scandium ion-accelerated scavenging reaction of cumylperoxyl radical by cyclic nitroxyl radical via electron transfer)

RN 46147-12-0 HCAPLUS  
 CN Pyrrolidinium, 3-(aminocarbonyl)-2,2,5,5-tetramethyl-1-oxo- (CA INDEX NAME)



CC 22-7 (Physical Organic Chemistry)  
Section cross-reference(s): 72, 74, 77

IT 46147-12-0

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)  
(scandium ion-accelerated scavenging reaction of cumylperoxyl  
radical by cyclic nitroxyl radical via electron  
transfer)

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3  
CITINGS)

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:1092057 HCAPLUS Full-text

DN 146:29957

TI The use of 2,2,6,6-tetramethylpiperinyl-oxides and derivatives for  
redox shuttle additives in Li-ion cells

AU Buhrmester, Claudia; Moshurchak, L. M.; Wang, R. L.; Dahn, J. R.

CS Department of Physics and Atmospheric Science, Dalhousie University,  
Halifax, NS, B3H 3J5, Can.

SO Journal of the Electrochemical Society (2006), 153(10), A1800-A1804  
CODEN: JESOAN; ISSN: 0013-4651

PB Electrochemical Society

DT Journal

LA English

AB The stable radical, 2,2,6,6-tetramethylpiperinyl oxide (TEMPO), is a  
stable redox shuttle in Li<sub>4</sub>/3Ti<sub>5</sub>/304/LiFePO<sub>4</sub> Li-ion coin cells  
providing over 120 cycles of shuttle-protected overcharge. Derivs.  
of TEMPO, such as 4-methoxy-TEMPO and 4-cyano-TEMPO are also stable.  
Relatives of TEMPO, having a 5-membered ring, such as 3-cyano-  
2,2,5,5-tetramethyl-1-pyrrolidinyl-oxyl (3-cyano-PROXYL) show similar  
stability. One disadvantage of these mols. is their relatively low  
oxidation potentials, which are too close to that of LiFePO<sub>4</sub> for com.  
applications. Ab initio calcns. show that the redox potential of

these mols. can be tailored by substitutions of F for the H atoms in the Me groups.

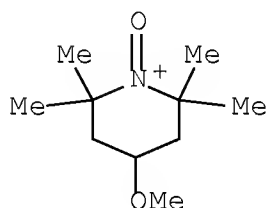
IT 135023-08-4

RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(methylnpiperinyl oxides and derivs. as redox shuttle additives for Li-ion batteries)

RN 135023-08-4 HCAPLUS

CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-1-oxo- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72

ST tetramethylpiperinyl oxide deriv redox shuttle additive lithium ion battery

IT Secondary batteries

(lithium; methylnpiperinyl oxides and derivs. as redox shuttle additives for Li-ion batteries)

IT 21324-40-3, Lithium hexafluorophosphate (LiPF<sub>6</sub>) 244761-29-3,  
Lithium bis(oxalato)borate

RL: TEM (Technical or engineered material use); USES (Uses)

(electrolyte; methylnpiperinyl oxides and derivs. as redox shuttle additives for Li-ion batteries with)

IT 2564-83-2, Tempo 2896-70-0, 4-Oxo-TEMPO 3225-26-1 35203-66-8

37149-18-1 38078-71-6 135023-08-4 299895-12-8

913815-78-8 913815-79-9 913815-81-3 913815-83-5

RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(methylnpiperinyl oxides and derivs. as redox shuttle additives for Li-ion batteries)

OSC.G 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)

RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:981494 HCAPLUS Full-text

DN 145:339158  
 TI Secondary lithium ion battery containing nitroxyl radical  
 compound in electrolytic solution for overcharging resistance  
 IN Nakahara, Kentaro; Matsuu, Masaaki  
 PA Nec Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 29pp.  
 CODEN: JKXXAF

DT Patent  
 LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 2006252917	A	20060921	JP 2005-67186	20050310

PRAI JP 2005-67186 20050310

AB The disclosed battery contains a nitroxyl radical compound in the electrolytic solution and an active mass compound having redox potential lower than the radical compound in the cathode. Increase of voltage in the battery is suppressed even under long-term overcharging.

IT 863309-36-8 909534-31-2

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(lithium ion battery containing nitroxyl radical compound in electrolytic solution and cathode active mass with low redox potential for overcharging resistance)

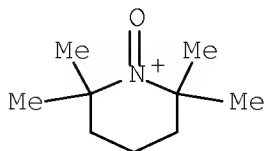
RN 863309-36-8 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-, 1-oxide hexafluorophosphate(1-)  
 (1:1) (CA INDEX NAME)

CM 1

CRN 45842-10-2

CMF C9 H18 N O



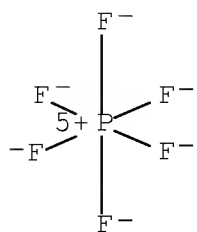
10/597,517

CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



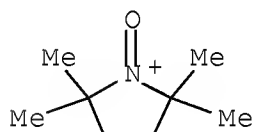
RN 909534-31-2 HCAPLUS

CN Pyrrolidinium, 2,2,5,5-tetramethyl-1-oxo-, tetrafluoroborate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 863309-37-9

CMF C8 H16 N O



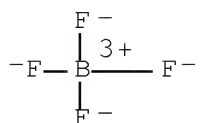
CM 2

CRN 14874-70-5

CMF B F4

CCI CCS





- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST cathode active mass nitroxyl radical electrolytic soln  
lithium battery; overcharging resistance lithium ion  
battery nitroxyl radical electrolytic soln
- IT Battery cathodes  
Electrolytic solutions  
(lithium ion battery containing nitroxyl radical compound in  
electrolytic solution and cathode active mass with low  
redox potential for overcharging resistance)
- IT Radicals, uses  
RL: DEV (Device component use); USES (Uses)  
(lithium ion battery containing nitroxyl radical compound in  
electrolytic solution and cathode active mass with low  
redox potential for overcharging resistance)
- IT 12031-92-4, Lithium manganese oxide (Li<sub>4</sub>Mn<sub>5</sub>O<sub>12</sub>) 12162-79-7,  
Lithium manganese oxide (LiMnO<sub>2</sub>) 15365-14-7, Iron lithium  
phosphate (FeLiPO<sub>4</sub>)  
RL: DEV (Device component use); USES (Uses)  
(cathode active mass; lithium ion battery  
containing nitroxyl radical compound in electrolytic solution and  
cathode active mass with low redox potential for  
overcharging resistance)
- IT 2406-25-9 2564-83-2 3229-53-6 27720-81-6 34549-03-6  
38582-73-9 863309-36-8 909534-31-2  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(lithium ion battery containing nitroxyl radical  
compound in electrolytic solution and cathode active mass  
with low redox potential for overcharging resistance)
- L25 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN
- AN 2005:902407 HCAPLUS Full-text
- DN 143:250986
- TI Secondary batteries using nitroxyl compound  
cathode active mass and good charge-discharge cycle  
performance
- IN Nakahara, Kentaro; Iriyama, Jiro; Iwasa, Shigeyuki; Suguro,  
Masahiro; Sato, Masaharu
- PA NEC Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005228712	A	20050825	JP 2004-38802	20040216

PRAI JP 2004-38802 20040216

OS MARPAT 143:250986

AB The devices have nitroxyl compound ~~cathode~~ active mass where electrons are exchanged between oxidized state  $N^+:O$  and reduced state  $NO\cdot$ , and Li or Li alloy anode active mass, where a part of the nitroxyl compds. are dissolved in electrolytic solns. Thus, a button-type secondary Li batteries having a ~~cathode~~ containing carbon paper impregnated with an electrolytic solution containing 2,2,6,6-tetramethyl-1-oxopiperidinium hexafluorophosphate, a Li anode, and porous polyethylene separator impregnated with the electrolytic solution is exemplified.

IT 31198-93-3P 33247-78-8P 863309-36-8P  
863309-38-0P 863309-40-4P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(secondary batteries using nitroxyl compound ~~cathode~~ active mass partly dissolved in electrolytic solns., and Li or Li alloy anode active mass)

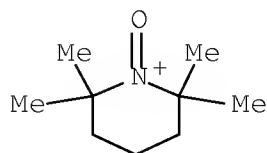
RN 31198-93-3 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-, 1-oxide perchlorate (1:1) (CA INDEX NAME)

CM 1

CRN 45842-10-2

CMF C9 H18 N O

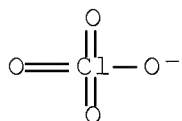


10/597,517

CM 2

CRN 14797-73-0

CMF Cl O4



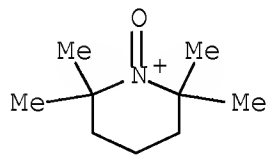
RN 33247-78-8 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo-, tetrafluoroborate(1-)  
(1:1) (CA INDEX NAME)

CM 1

CRN 45842-10-2

CMF C9 H18 N O



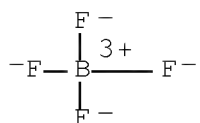
CM 2

CRN 14874-70-5

CMF B F4

CCI CCS

10/597,517



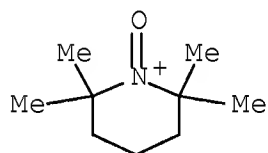
RN 863309-36-8 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-, 1-oxide hexafluorophosphate(1-)  
(1:1) (CA INDEX NAME)

CM 1

CRN 45842-10-2

CMF C9 H18 N O

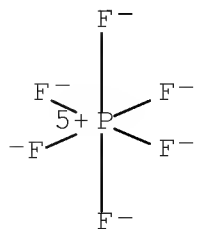


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



RN 863309-38-0 HCAPLUS

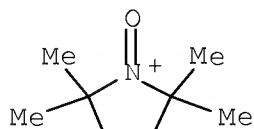
10/597,517

CN Pyrrolidinium, 2,2,5,5-tetramethyl-1-oxo-, hexafluorophosphate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 863309-37-9

CMF C8 H16 N O

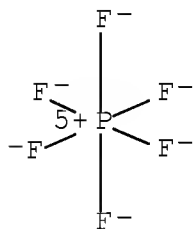


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



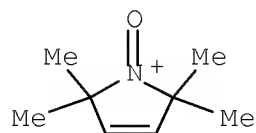
RN 863309-40-4 HCAPLUS

CN 1H-Pyrrolium, 2,5-dihydro-2,2,5,5-tetramethyl-1-oxo-,  
hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 863309-39-1

CMF C8 H14 N O

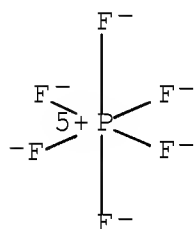


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



- IC ICM H01M010-40  
ICS H01M004-02; H01M004-38; H01M004-60; H01M004-66
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 27
- ST lithium battery cathode nitroxyl compd;  
tetramethyloxopiperidinium fluorophosphate cathode button  
lithium battery
- IT Secondary batteries  
(button-type; secondary batteries using nitroxyl compound  
cathode active mass partly dissolved in electrolytic  
solns., and Li or Li alloy anode active mass)
- IT Copying paper  
(carbon paper, cathode current collector; secondary  
batteries using nitroxyl compound cathode active  
mass partly dissolved in electrolytic solns., and Li or Li alloy  
anode active mass)
- IT Secondary batteries  
(lithium; secondary batteries using nitroxyl compound  
cathode active mass partly dissolved in electrolytic  
solns., and Li or Li alloy anode active mass)

IT Battery anodes  
 Battery cathodes  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT Lithium alloy, base  
 RL: DEV (Device component use); USES (Uses)  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT 7429-90-5, Aluminum, uses  
 RL: DEV (Device component use); USES (Uses)  
 (cathode; secondary batteries using nitroxyl  
 compound cathode active mass partly dissolved in  
 electrolytic solns., and Li or Li alloy anode active mass)

IT 7439-93-2, Lithium, uses 53680-59-4 95535-75-4, Lithium silicide  
 RL: DEV (Device component use); USES (Uses)  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT 31198-93-3P 33247-78-8P 863309-36-8P  
 863309-38-0P 863309-40-4P  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
 (Preparation); USES (Uses)  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT 2564-83-2, 2,2,6,6-Tetramethylpiperidinyloxy  
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or  
 reagent); USES (Uses)  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT 3229-53-6, 2,2,5,5-Tetramethylpyrrolidinyloxy 27720-81-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

L25 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2004:937 HCAPLUS Full-text  
 DN 140:217194  
 TI Reaction of Nitrosonium Tetrafluoroborate with Nitroxyl Radicals  
 AU Borodkin, G. I.; Elanov, I. R.; Shakirov, M. M.; Shubin, V. G.  
 CS Siberian Division, Vorozhtsov Novosibirsk Institute of Organic  
 Chemistry, Russian Academy of Sciences, Novosibirsk, 630090, Russia  
 SO Russian Journal of Organic Chemistry (Translation of Zhurnal

Organicheskoi Khimii) (2003), 39(8), 1144-1150

CODEN: RJOCEQ; ISSN: 1070-4280

PB MAIK Nauka/Interperiodica Publishing

DT Journal

LA English

AB It was established by means of multinuclear magnetic resonance method ( $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{19}\text{F}$  and  $^{14}\text{N}$ ) that reaction of 2,2,6,6-tetramethyl-4-R-piperidin-1-oxyl radicals ( $\text{R} = \text{H}$ ,  $\text{OH}$ ,  $\text{OMe}$ ,  $\text{OCOPh}$ ,  $\text{NHCOMe}$ ) with nitrosonium tetrafluoroborate gave rise to the corresponding 2,2,6,6-tetramethyl-1-oxo-4-R-piperidinium tetrafluoroborates. Linear correlations were found between the chemical shifts of atoms  $\text{H}_4$ ,  $\text{C}_4$  of cations and resp.  $\sigma_1$ -consts. of substituents  $\text{R}$  and chemical shifts of  $\text{C}_4$  atom calculated from increments of substitution. The conformational features of the generated nitrosonium cations are considered on the grounds of vicinal coupling consts.  $J_{\text{HH}}$  and quantum-chemical calcns. by AM1 method.

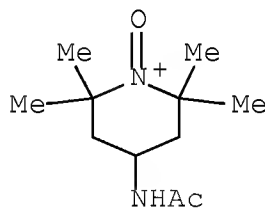
IT 136708-39-9 666179-58-4

RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)

(NMR and ab initio on reaction of nitrosonium tetrafluoroborate with nitroxyl radicals)

RN 136708-39-9 HCAPLUS

CN Piperidinium, 4-(acetylamino)-2,2,6,6-tetramethyl-1-oxo- (CA INDEX NAME)



RN 666179-58-4 HCAPLUS

CN Piperidinium, 4-hydroxy-2,2,6,6-tetramethyl-1-oxo-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

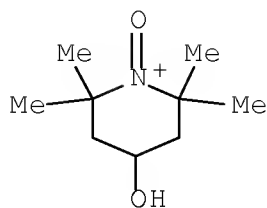
CM 1

CRN 45985-24-8

CMF C9 H18 N O2



10/597,517

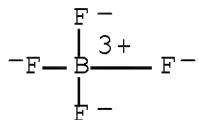


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



IT 33247-78-8 33247-81-3 45985-26-0  
135023-09-5 219543-09-6 666179-59-5

RL: FMU (Formation, unclassified); PRP (Properties); FORM  
(Formation, nonpreparative)

(NMR and ab initio on reaction of nitrosonium tetrafluoroborate  
with nitroxyl radicals)

RN 33247-78-8 HCAPLUS

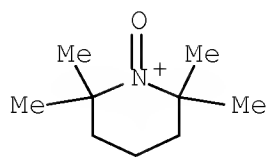
CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo-, tetrafluoroborate(1-)  
(1:1) (CA INDEX NAME)

CM 1

CRN 45842-10-2

CMF C9 H18 N O

10/597,517

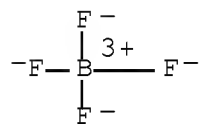


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



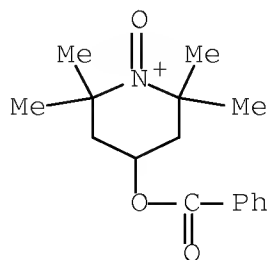
RN 33247-81-3 HCAPLUS

CN Piperidinium, 4-(benzoyloxy)-2,2,6,6-tetramethyl-1-oxo-,  
tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 47089-86-1

CMF C16 H22 N O3



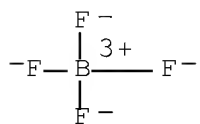
10/597,517

CM 2

CRN 14874-70-5

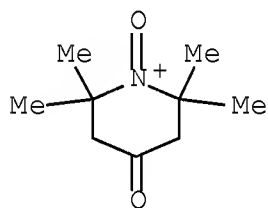
CMF B F4

CCI CCS



RN 45985-26-0 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1,4-dioxo- (9CI) (CA INDEX NAME)



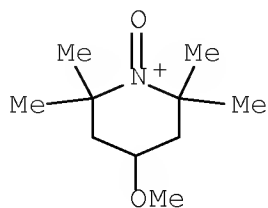
RN 135023-09-5 HCAPLUS

CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-1-oxo-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 135023-08-4

CMF C10 H20 N O2

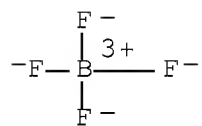


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



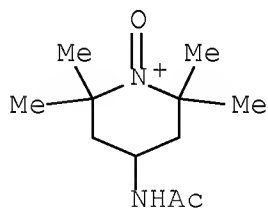
RN 219543-09-6 HCAPLUS

CN Piperidinium, 4-(acetylamino)-2,2,6,6-tetramethyl-1-oxo-,  
tetrafluoroborate(1-) (1:1) (CA INDEX NAME)

CM 1

CRN 136708-39-9

CMF C11 H21 N2 O2

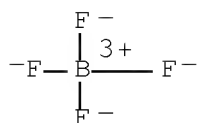


CM 2

CRN 14874-70-5

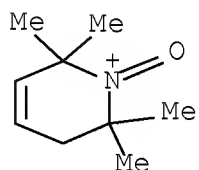
CMF B F4

CCI CCS



RN 666179-59-5 HCAPLUS

CN Pyridinium, 1,2,3,6-tetrahydro-2,2,6,6-tetramethyl-1-oxo- (9CI) (CA INDEX NAME)



CC 22-7 (Physical Organic Chemistry)  
Section cross-reference(s): 27, 77

IT 136708-39-9 666179-58-4

RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)

(NMR and ab initio on reaction of nitrosonium tetrafluoroborate with nitroxyl radicals)

IT 33247-78-8 33247-81-3 45985-26-0  
135023-09-5 219543-09-6 666179-59-5

RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)

(NMR and ab initio on reaction of nitrosonium tetrafluoroborate with nitroxyl radicals)

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

RE.CNT 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2001:613303 HCAPLUS Full-text

DN 135:344169

TI Interaction of chlorine dioxide with nitroxyl radicals

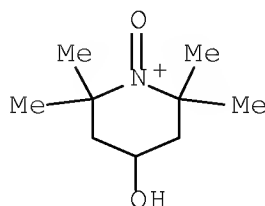
AU Ganiev, I. M.; Timergazin, K. K.; Shereshovets, V. V.; Grigor'ev, I.

A.; Tolstikov, G. A.  
 CS Institute of Organic Chemistry, Ufa Research Center of the Russian Academy of Sciences, Ufa, 450054, Russia  
 SO Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (2001), 50(4), 614-619  
 CODEN: RCBUEY; ISSN: 1066-5285  
 PB Kluwer Academic/Consultants Bureau  
 DT Journal  
 LA English  
 AB The formation of charge transfer complexes between chlorine dioxide and nitroxyl radicals [2,2,6,6-tetramethylpiperidin-1-oxyl, 4-hydroxy-2,2,6,6-tetramethylpiperidin-1-oxyl, 4-oxo-2,2,6,6-tetramethylpiperidin-1-oxyl, 4-methoxy-2,2,6,6-tetramethylpiperidin-1-oxyl, 4-acetylamido-2,2,6,6-tetramethylpiperidin-1-oxyl, 2,2,5,5-tetramethyl-4-phenyl-3-imidazolin-1-oxyl, and bis(4-methoxyphenyl) nitroxide] in acetone, acetonitrile, n-heptane, di-Et ether, carbon tetrachloride, toluene, and dichloromethane was found by spectrophotometry at -60 to +20°C. The thermodyn. parameters of complex formation were determined. The radical structure affects its complex formation ability. The charge transfer complex is transformed into the corresponding oxoammonium salt.  
 IT 233280-37-0P 328557-80-8P  
 371156-05-7P 371156-06-8P 371156-08-0P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (charge-transfer complexation of chlorine dioxide with nitroxyl radicals and their further transformation to oxoammonium chlorites)  
 RN 233280-37-0 HCAPLUS  
 CN Piperidinium, 4-hydroxy-2,2,6,6-tetramethyl-1-oxo-, chlorite (salt) (9CI) (CA INDEX NAME)

CM 1

CRN 45985-24-8

CMF C9 H18 N O2

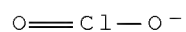


10/597,517

CM 2

CRN 14998-27-7

CMF Cl O2



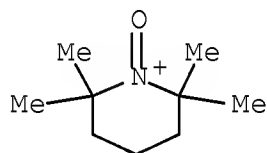
RN 328557-80-8 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo-, chlorite (CA INDEX NAME)

CM 1

CRN 45842-10-2

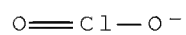
CMF C9 H18 N O



CM 2

CRN 14998-27-7

CMF Cl O2



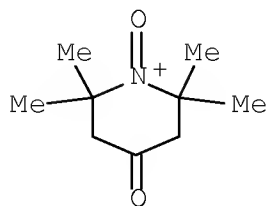
RN 371156-05-7 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1,4-dioxo-, chlorite (9CI) (CA INDEX NAME)

CM 1

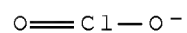
10/597,517

CRN 45985-26-0  
CMF C9 H16 N O2



CM 2

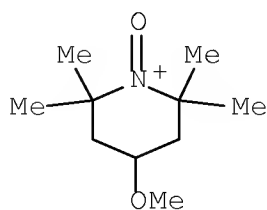
CRN 14998-27-7  
CMF C1 O2



RN 371156-06-8 HCAPLUS  
CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-1-oxo-, chlorite (9CI)  
(CA INDEX NAME)

CM 1

CRN 135023-08-4  
CMF C10 H20 N O2



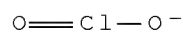


10/597,517

CM 2

CRN 14998-27-7

CMF Cl O2



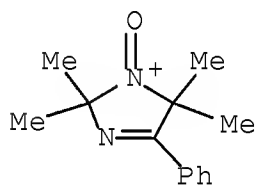
RN 371156-08-0 HCAPLUS

CN 1H-Imidazolium, 2,5-dihydro-2,2,5,5-tetramethyl-1-oxo-4-phenyl-,  
chlorite (9CI) (CA INDEX NAME)

CM 1

CRN 371156-07-9

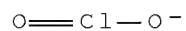
CMF C13 H17 N2 O



CM 2

CRN 14998-27-7

CMF Cl O2



CC 22-12 (Physical Organic Chemistry)

IT 233280-37-0P 328557-80-8P

371156-05-7P 371156-06-8P 371156-08-0P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(charge-transfer complexation of chlorine dioxide with  
nitroxyl radicals and their further transformation to  
oxoammonium chlorites)

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2  
CITINGS)

RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2001:167234 HCAPLUS Full-text

DN 135:52639

TI Selective electrocatalytic oxidation of N-alkyl-N-methylanilines to  
N-alkylformanilides using nitroxyl radical

AU Kashiwagi, Yoshitomo; Anzai, Jun-Ichi

CS Graduate School of Pharmaceutical Sciences, Tohoku University,  
Sendai, 980-8578, Japan

SO Chemical & Pharmaceutical Bulletin (2001), 49(3), 324-326  
CODEN: CPBTAL; ISSN: 0009-2363

PB Pharmaceutical Society of Japan

DT Journal

LA English

AB Electrocatalytic oxidation of N-alkyl-N-methylanilines was studied  
using 4-benzoyloxy-2,2,6,6-tetramethylpiperidiny-N-oxyl as a  
nitroxyl radical. The reaction with N-alkyl-N-methylanilines led to  
direct formation of N-alkylformanilides in the presence of H<sub>2</sub>O in  
reaction media in adequate conversion (>75.8%), high current  
efficiency (>89.2%) and high selectivity (>93.8%).

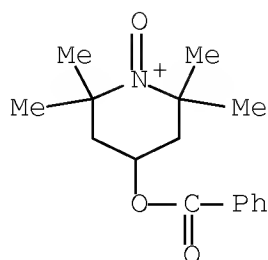
IT 47089-86-1

RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation,  
nonpreparative); RACT (Reactant or reagent)

(electrochem. oxidative formation in selective electrocatalytic  
oxidation of N-alkylmethylanilines to N-alkylformanilides using  
nitroxyl radical)

RN 47089-86-1 HCAPLUS

CN Piperidinium, 4-(benzoyloxy)-2,2,6,6-tetramethyl-1-oxo- (9CI) (CA  
INDEX NAME)



CC 72-2 (Electrochemistry)  
 Section cross-reference(s): 22, 25

IT 47089-86-1  
 RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)  
 (electrochem. oxidative formation in selective electrocatalytic oxidation of N-alkylmethylanilines to N-alkylformanilides using nitroxyl radical)

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1999:380262 HCAPLUS Full-text

DN 131:115978

TI Complexes of chlorine dioxide with nitroxyl radicals

AU Ganiev, Ilgiz M.; Timerghazin, Qadir K.; Khalizov, Alexey F.; Andriyashina, Nadezhda M.; Shereshovets, Valerii V.; Volodarsky, Leonid B.; Tolstikov, Genrikh A.

CS Institute of Organic Chemistry, Ufa Research Centre of Russian Academy of Sciences, Ufa, Russia

SO Tetrahedron Letters (1999), 40(25), 4737-4740  
 CODEN: TELEAY; ISSN: 0040-4039

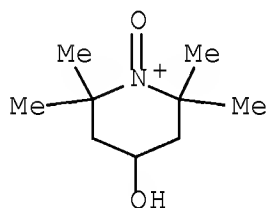
PB Elsevier Science Ltd.

DT Journal

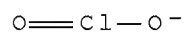
LA English

AB Chlorine dioxide forms red-colored ( $\lambda_{\text{max}}=480$  nm) CT complexes with persistent piperidine and imidazoline nitroxyl radicals in di-Et ether, n-pentane, carbon tetrachloride, methylene chloride and on silica gel surface. Equilibrium consts., enthalpy and entropy of formation and extinction coefficient of the complex between ClO<sub>2</sub> and 2,2,6,6-tetramethyl-4-hydroxypiperidin-1-oxyl in di-Et ether were determined In Et<sub>2</sub>O the complex is stable under normal conditions, in other media it transforms into the oxoammonium salt.

IT 233280-37-0  
 RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)  
 (CT complexes of chlorine dioxide with nitroxyl radicals as intermediates in their conversion to oxoammonium salts)  
 RN 233280-37-0 HCAPLUS  
 CN Piperidinium, 4-hydroxy-2,2,6,6-tetramethyl-1-oxo-, chlorite (salt) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 45985-24-8  
 CMF C9 H18 N O2



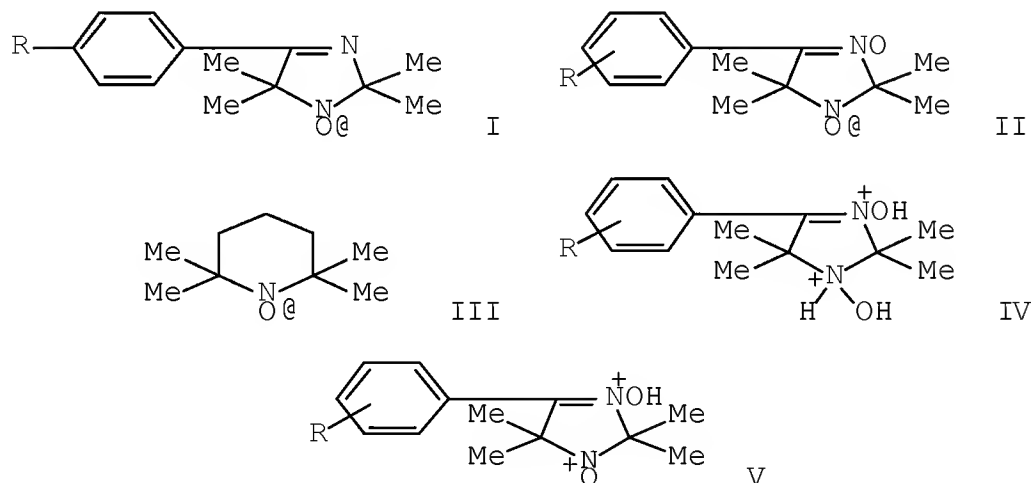
CM 2  
 CRN 14998-27-7  
 CMF Cl O2



CC 22-12 (Physical Organic Chemistry)  
 IT 233280-37-0  
 RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)  
 (CT complexes of chlorine dioxide with nitroxyl radicals as intermediates in their conversion to oxoammonium salts)  
 OSC.G 9 THERE ARE 9 CAPLUS RECORDS THAT CITE THIS RECORD (9 CITINGS)

RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
AN 1987:597363 HCAPLUS Full-text  
DN 107:197363  
OREF 107:31643a,31646a  
TI Study of reactions of nitroxyl radicals in strong acids and  
superacids by EPR and proton and carbon-13 NMR  
AU Grigor'ev, I. A.; Shchukin, G. I.; Volodarskii, L. B.  
CS Inst. Org. Khim., Novosibirsk, USSR  
SO Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1986), (10),  
2277-83  
CODEN: IASKA6; ISSN: 0002-3353  
DT Journal  
LA Russian  
GI



AB Protonation of nitroxides I (R = H, F), II (R = H, 4-Me, 4-F, 4-NO<sub>2</sub>, 2-NO<sub>2</sub>, etc.), and III in strong acids or superacids gave dications, e.g., IV and V. Smaller concns. of cation radicals were also detected.

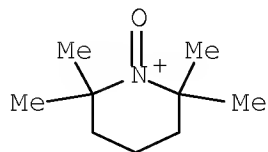
IT 45842-10-2P 95883-71-9P 95883-74-2P  
95883-75-3P 110880-82-5P 110880-83-6P  
110880-84-7P

RL: FORM (Formation, nonpreparative); PREP (Preparation)  
(formation of, from nitroxyl radicals in acids)

10/597,517

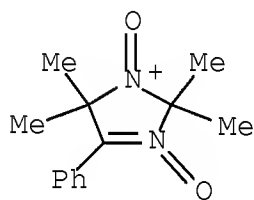
RN 45842-10-2 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo- (CA INDEX NAME)



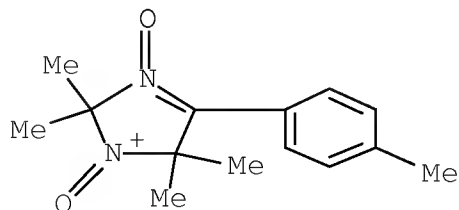
RN 95883-71-9 HCAPLUS

CN 1H-Imidazolium, 2,5-dihydro-2,2,5,5-tetramethyl-4-phenyl-, conjugate acid (1:1) (CA INDEX NAME)



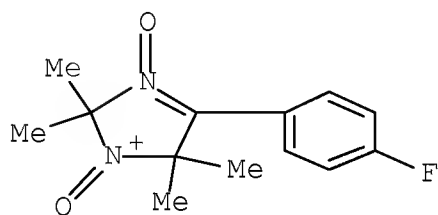
RN 95883-74-2 HCAPLUS

CN 1H-Imidazolium, 2,5-dihydro-2,2,5,5-tetramethyl-4-(4-methylphenyl)-, conjugate acid (1:1) (CA INDEX NAME)



RN 95883-75-3 HCAPLUS

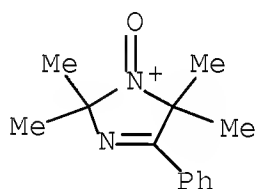
CN 1H-Imidazolium, 4-(4-fluorophenyl)-2,5-dihydro-2,2,5,5-tetramethyl-,  
conjugate acid (1:1) (CA INDEX NAME)



● H<sup>+</sup>

RN 110880-82-5 HCAPLUS

CN 1H-Imidazolium, 2,5-dihydro-2,2,5,5-tetramethyl-4-phenyl-, conjugate  
acid (1:1) (CA INDEX NAME)

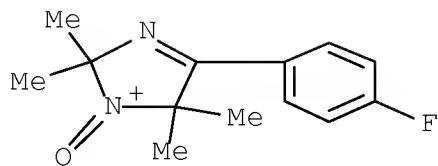


● H<sup>+</sup>

RN 110880-83-6 HCAPLUS

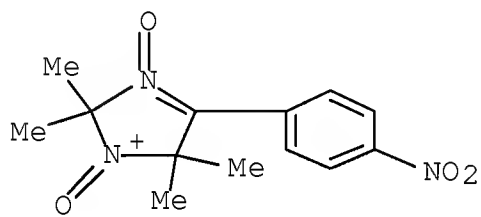
CN 1H-Imidazolium, 4-(4-fluorophenyl)-2,5-dihydro-2,2,5,5-tetramethyl-,  
conjugate acid (1:1) (CA INDEX NAME)

10/597,517



RN 110880-84-7 HCAPLUS

CN 1H-Imidazolium, 2,5-dihydro-2,2,5,5-tetramethyl-4-(4-nitrophenyl)-,  
conjugate acid (1:1) (CA INDEX NAME)



CC 22-10 (Physical Organic Chemistry)

IT 45842-10-2P 95883-70-8P 95883-71-9P  
95883-72-0P 95883-73-1P 95883-74-2P  
95883-75-3P 110880-79-0P 110880-81-4P  
110880-82-5P 110880-83-6P 110880-84-7P  
110880-85-8P 110906-60-0P

RL: FORM (Formation, nonpreparative); PREP (Preparation)  
(formation of, from nitroxyl radicals in acids)

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YOU HAVE REQUESTED DATA FROM FILE 'HCAPLUS' - CONTINUE? (Y)/N:y



L32 ANSWER 1 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN  
AN 2008:309637 HCAPLUS Full-text  
DN 150:261964  
TI Spectral Properties of Probes Containing Benzothioxanthene  
Chromophore Linked with Hindered Amine in Solution and in  
Polymer Matrices  
AU Hrdlovic, Pavol; Chmela, Stefan; Danko, Martin; Sarakha, Mohamed;  
Guyot, Ghislain  
CS Polymer Institute, Slovak Academy of Sciences, Bratislava, 842 36,  
Slovakia  
SO Journal of Fluorescence (2008), 18(2), 393-402  
CODEN: JOFLEN; ISSN: 1053-0509  
PB Springer  
DT Journal  
LA English  
OS CASREACT 150:261964  
AB Absorption and emission spectroscopy as well as laser flash  
photolysis was employed in order to characterize the spectral  
properties of novel probes based on benzothioxantheneimide  
chromophore covalently linked with different types of sterically  
hindered amines. These were chosen as 2-(2,2,6,6-tetramethyl-4-  
piperidyl)-thioxantheno[2,1,9-dej]isoquinoline-1,3-dione (BTXINH),  
the equivalent stable nitroxyl radical, i.e.  
2-(1-oxo-2,2,6,6-tetramethyl-4-  
piperidyl)thioxantheno[2,1,9-dej]isoquinoline 1,3-dione (BTXINO) and  
the alkoxy derivative 2-(1-(1'-phenylethoxy)-2,2,6,6-tetramethyl-4-  
piperidyl)-thioxantheno[2,1,9-dej]isoquinoline-1,3-dione (BTXINOR).  
Spectral properties, in solns. and in various polymer matrixes such  
as polystyrene, polymethyl methacrylate, polyvinyl chloride and  
polypropylene, were compared with the compound 2-(1-dodecyl)-  
thioxantheno[2,1,9-dej]isoquinoline-1,3-dione (BTXID) taken in the  
present study as a reference compound. By means of the fluorescence  
decay and in the contrary to three other probes, BTXINO probe clearly  
showed a bi-exponential decay while the three other probes led to  
monoexponential decay. Two different singlet excited states with  
lifetimes of about 0.4 and 5 ns were proposed. They correspond to  
two dispositions of the nitroxyl radical chain above and along the  
fluorescent moiety of the mol. Such behavior depends on the  
surrounding media. Moreover, an efficient intramol. quenching of the  
fluorescence emission was only observed with the short lived singlet  
excited state. The ratio BTXID/BTXINO was found equal to about 4 and  
9 in solns. and polymer matrixes resp. Laser flash photolysis  
indicated that the novel probes as well as the model compound yielded  
transient absorption with maximum at 530 nm, corresponding to the  
triplet states. The intermol. quenching of such species by mol.  
oxygen and by free N-oxyl, such as 1-oxy-2,2,6,6-teramethylpiperidine

(TEMPO) and 1-oxy-2,2,6,6-tetramethyl-4-hydroxypiperidine (TEMPOL), and the intramol. quenching was not efficient.

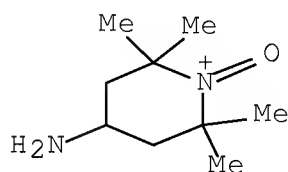
IT 192767-74-1

RL: RCT (Reactant); RACT (Reactant or reagent)

(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in **polymer** matrixes)

RN 192767-74-1 HCAPLUS

CN Piperidinium, 4-amino-2,2,6,6-tetramethyl-1-oxo- (CA INDEX NAME)



CC 41-5 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)

Section cross-reference(s): 74

ST spectra benzothioxanthene chromophore linked hindered amine soln  
**polymer** matrix; fluorescence quantum yield stable radical  
**polymer** matrix

IT Flash photolysis

(laser; spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in **polymer** matrixes)

IT Fluorescence quenching

(of anthracene by radicals; spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in **polymer** matrixes)

IT Chromophores

Emission spectra

Fluorescence

Fluorescent indicators

Triplet state

UV and visible spectra

(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in **polymer** matrixes)

IT 55684-18-9

RL: CAT (Catalyst use); USES (Uses)

(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in **polymer** matrixes)

IT 9002-86-2, PVC 9003-07-0, Polypropylene 9003-53-6, Polystyrene

9011-14-7, PMMA  
RL: NUU (Other use, unclassified); USES (Uses)  
(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in polymer matrixes)

IT 120-12-7, Anthracene, properties 2226-96-2, TEMPOL 2564-83-2, TEMPO  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)  
(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in polymer matrixes)

IT 266358-78-5P 881205-96-5P  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in polymer matrixes)

IT 52222-05-6P 1120349-57-6P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in polymer matrixes)

IT 100-42-5, Styrene, reactions 124-22-1, Dodecylamine 14121-49-4 36768-62-4, 4-Amino-2,2,6,6-tetramethylpiperidine 192767-74-1  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in polymer matrixes)

IT 16940-66-2  
RL: RGT (Reagent); RACT (Reactant or reagent)  
(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in polymer matrixes)

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

RE.CNT 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 2 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN  
AN 2007:778762 HCAPLUS Full-text  
DN 147:323382  
TI Towards controlled graft polymerization of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoamminium bromide salt. Facile synthetic pathway using nitroxide chemistry  
AU Bonilla-Cruz, Jose; Lara-Ceniceros, Tania; Saldivar-Guerra, Enrique; Jimenez-Regalado, Enrique  
CS Centro de Investigacion en Quimica Aplicada (CIQA), Coahuila, 25253, Mex.  
SO Macromolecular Rapid Communications (2007), 28(13), 1397-1403

CODEN: MRCOE3; ISSN: 1022-1336

PB Wiley-VCH Verlag GmbH &amp; Co. KGaA

DT Journal

LA English

AB A TEMPO bromide salt is used to functionalize a silica surface with nitroxyl moieties. The functionalization reaction takes place in 48 h under mild conditions. In a second step, grafts of styrene-maleic anhydride copolymer are grown from the functionalized silica surface by heating it in the presence of the monomers. FT-IR and TGA anal. show that the silica was first functionalized with nitroxide moieties, and then that grafts of styrene-maleic anhydride grew from the functionalized silica surface. A reaction mechanism is proposed in order to explain the findings. The results suggest that the oxoammonium salts are good candidates for the functionalization and grafting of surfaces that contain hydroxy groups and for the generation of hybrid materials with improved properties.

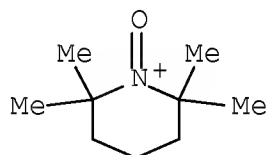
IT 85917-27-7DP, surface reaction product with silica

RL: CAT (Catalyst use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(facile synthetic pathway using nitroxide chemical towards controlled graft polymerization of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoammonium bromide salt)

RN 85917-27-7 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo-, bromide (CA INDEX NAME)



● Br<sup>-</sup>

CC 35-4 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 37

ST TEMPO functionalized silica surface graft styrene maleic anhydride copolymer

IT Composites

Molecular weight

Polydispersity

## Polymer chains

## Thermal stability

(facile synthetic pathway using nitroxide chemical towards controlled graft polymerization of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoamminium bromide salt)

## IT Polymerization

(graft, surface; facile synthetic pathway using nitroxide chemical towards controlled graft polymerization of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoamminium bromide salt)

## IT 85917-27-7DP, surface reaction product with silica

RL: CAT (Catalyst use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(facile synthetic pathway using nitroxide chemical towards controlled graft polymerization of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoamminium bromide salt)

## IT 7631-86-9DP, Silica, TEMPO-functionalized

RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(facile synthetic pathway using nitroxide chemical towards controlled graft polymerization of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoamminium bromide salt)

## IT 2564-83-2 7726-95-6, Bromine, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(facile synthetic pathway using nitroxide chemical towards controlled graft polymerization of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoamminium bromide salt)

## IT 9011-13-6P, Maleic anhydride-styrene copolymer

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(graft on silica surface; facile synthetic pathway using nitroxide chemical towards controlled graft polymerization of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoamminium bromide salt)

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 3 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1994:324380 HCAPLUS Full-text

DN 120:324380

OREF 120:57097a,57100a

TI Synthesis of Polystyrene Having an Aminoxy Terminal by the Reactions of Living Polystyrene with an Oxoaminium Salt and with the Corresponding Nitroxyl Radical

AU Yoshida, Eri; Ishizone, Takashi; Hirao, Akira; Nakahama, Seiichi; Takata, Toshikazu; Endo, Takeshi

CS Department of Polymer Chemistry, Tokyo Institute of Technology, Tokyo, 152, Japan

SO Macromolecules (1994), 27(12), 3119-24

CODEN: MAMOBX; ISSN: 0024-9297

DT Journal

LA English

AB In order to introduce the C-O-N linkage at the polymer chain end, the reactions of poly(styryllithium) with 1-oxo-4-methoxy-2,2,6,6-tetramethylpiperidinium salt (OAS) and with the corresponding nitroxyl radical (MTEMPO) were investigated in THF at -78 °. The aminoxy terminal group was introduced quant. by the reactions of the living polymer with OAS in the presence of MTEMPO. The reactions proceed via one-electron transfer from the polystyryl anion to OAS, resulting in the polymer radical, which is coupled with MTEMPO, to yield the polystyrene with an aminoxy terminal. Similarly, the electron-transfer reaction proceeded between poly(styryllithium) and MTEMPO to yield the aminoxy-terminated polystyrene quant. The resulting polystyrene could initiate the radical polymns. of Me, Et, and Bu acrylates to give the corresponding block copolymers.

IT 148537-46-6DP, 4-Methoxy-2,2,6,6-tetramethyl-1-oxopiperidinium hexafluoroantimonate, reaction products with polystyrene

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);

RACT (Reactant or reagent)

(preparation and block polymerization of, with acrylates)

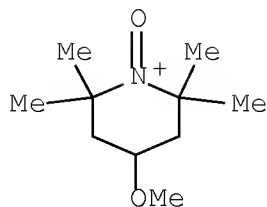
RN 148537-46-6 HCAPLUS

CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-1-oxo-,  
(OC-6-11)-hexafluoroantimonate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 135023-08-4

CMF C10 H20 N O2

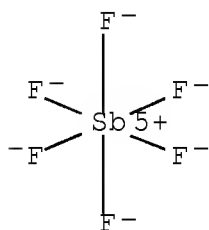


CM 2

CRN 17111-95-4

CMF F6 Sb

CCI CCS



CC 35-8 (Chemistry of Synthetic High Polymers)

ST aminoxy terminated polystyrene block polymer;  
oxomethoxytetramethylpiperidinium reaction polystyrene;  
methoxytetramethylpiperidinoxyl reaction polystyrene

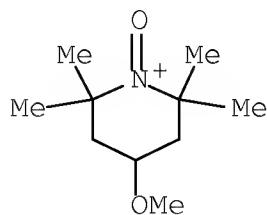
IT 9003-53-6DP, Polystyrene, aminoxy-terminated 95407-69-5DP,  
4-Methoxy-2,2,6,6-tetramethylpiperidin-1-oxyl, reaction products  
with polystyrene 148537-46-6DP,  
4-Methoxy-2,2,6,6-tetramethyl-1-oxopiperidinium  
hexafluoroantimonate, reaction products with polystyrene  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)  
(preparation and block polymerization of, with acrylates)

IT 110772-34-4P, Butyl acrylate-styrene block copolymer  
111740-42-2P, Methyl acrylate-styrene block copolymer  
114397-35-2P, Ethyl acrylate-styrene block copolymer  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, using aminoxy-terminated polystyrene)

OSC.G 55 THERE ARE 55 CAPLUS RECORDS THAT CITE THIS RECORD (55

## CITINGS)

L32 ANSWER 4 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 1993:255497 HCAPLUS Full-text  
 DN 118:255497  
 OREF 118:44425a,44428a  
 TI Oxidation of poly(vinyl alcohol) with an oxoammonium salt  
 AU Yoshida, Eri; Yamaguchi, Masao; Takata, Toshikazu; Endo, Takeshi  
 CS Res. Lab. Resour. Util., Tokyo Inst. Technol., Yokohama, 227, Japan  
 SO Makromolekulare Chemie (1993), 194(5), 1307-14  
 CODEN: MACEAK; ISSN: 0025-116X  
 DT Journal  
 LA English  
 AB Oxidation of poly(vinyl alc.) (I) with 1-oxo-4-methoxy-2,2,6,6-tetramethylpiperidinium chloride (II) prepared by a 1-electron oxidation of the corresponding nitroxyl radical was carried out. I with d.p. 300 and degree of saponification (DS) 88 mol% was oxidized with II in the presence of Mg(ClO<sub>4</sub>)<sub>2</sub> in N-methyl-2-pyrrolidone to obtain a polymer containing 66 mol% ketone units. The oxidation was dependent on solvent and inorg. additive and DS of I but independent of d.p. In the case of I with extremely low (10 mol%) or high (98.5 mol%) DS, no or little oxidation took place. The highest ketone content was obtained in a polymer with DS 88 mol%. The ketone content could be controlled by the amount of II.  
 IT 95407-70-8  
 RL: USES (Uses)  
 (oxidizing agents, for saponified poly(vinyl acetate))  
 RN 95407-70-8 HCAPLUS  
 CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-, 1-oxide chloride (1:1)  
 (CA INDEX NAME)



● Cl<sup>-</sup>

CC 35-8 (Chemistry of Synthetic High Polymers)



IT 95407-70-8

RL: USES (Uses)

(oxidizing agents, for saponified poly(vinyl acetate))

L32 ANSWER 5 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1992:651935 HCAPLUS Full-text

DN 117:251935

OREF 117:43639a,43642a

TI Oxidation of polymeric terminal diols with iron(III) or copper(II) salts mediated by the nitroxyl radical

AU Yoshida, Eri; Takata, Toshikazu; Endo, Takeshi

CS Res. Lab. Resour. Util., Tokyo Inst. Technol., Yokohama, 227, Japan

SO Macromolecules (1992), 25(26), 7282-5

CODEN: MAMOBX; ISSN: 0024-9297

DT Journal

LA English

AB 4-Substituted-2,2,6,6-tetramethylpiperidine-1-oxyl (I) is a stable radical mediating a reversible redox reaction between oxoammonium salt and hydroxylamine. The oxidation of polymeric terminal diols with Fe(III) or Cu(II) salts mediated by I is carried out to obtain the corresponding polymers containing carbonyl moieties. When 4 equiv of Cu(NO<sub>3</sub>)<sub>2</sub>, 1 equiv of Cu(OH)<sub>2</sub> acid-trapping agent, and 0.2 equiv of I (4-methoxy derivative) are used, a hydrogenated polybutadiene terminal diol is efficiently and selectively oxidized to the corresponding polymer with aldehyde or ketone groups in both termini without any intermol. reaction. Furthermore, I supported on crosslinked polystyrene beads catalyzed efficiently the oxidation of hydrogenated polybutadiene diol.

IT 144375-62-2P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of and oxidation of hydrogenated polybutadiene diol

with)

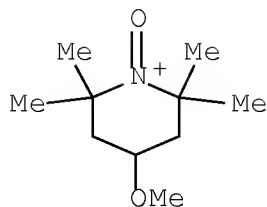
RN 144375-62-2 HCAPLUS

CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-1-oxo-, nitrate (9CI)  
(CA INDEX NAME)

CM 1

CRN 135023-08-4

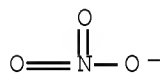
CMF C10 H20 N O2



CM 2

CRN 14797-55-8

CMF N 03

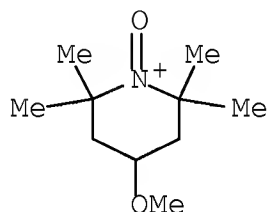


- CC 35-8 (Chemistry of Synthetic High Polymers)
- ST oxidn polydiol **nitroxyl** radical catalyst; polybutadiene hydrogenated diol oxidn **nitroxyl**; iron **nitroxyl** catalyst oxidn polydiol; copper nitroxy catalyst oxidn polydiol
- IT Oxidation catalysts  
(**nitroxyl** radical and iron or copper, for **polymeric** terminal diols)
- IT Oxidation  
(of **polymeric** terminal diols, in presence of **nitroxyl** radical and iron or copper)
- IT Polyesters, reactions  
Polyoxyalkylenes, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(oxidation of, in presence of **nitroxyl** radical and iron or copper)
- IT Rubber, butadiene, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(hydroxy-terminated, oxidation of, in presence of **nitroxyl** radical and iron or copper)
- IT 20427-59-2, Copper hydroxide (Cu(OH)<sub>2</sub>)  
RL: USES (Uses)  
(acid-trapping agents, for **nitroxyl** radical-catalyzed oxidation of **polymeric** terminal diols)
- IT 95407-69-5

- RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, containing iron or copper salts, for oxidation of polymeric terminal diols)
- IT 3251-23-8 7447-39-4, Copper chloride (CuCl<sub>2</sub>), uses 7705-08-0, Iron trichloride, uses 10028-22-5 10421-48-4 11129-27-4, Copper bromide 13746-66-2 13770-18-8  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, containing nitroxyl radical catalysts, for oxidation of polymeric terminal diols)
- IT 2226-96-2, 4-Hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, crosslinked polystyrene bead-supported, for oxidation of polymeric terminal diols)
- IT 9003-17-2D, Polybutadiene, hydrogenated, diol 24936-97-8, Adipic acid-1,4-butanediol copolymer, sru 24979-97-3 25103-87-1, Adipic acid-1,4-butanediol copolymer 25190-06-1, THF polymer, sru  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (oxidation of, in presence of nitroxyl radical and iron or copper)
- IT 144375-62-2P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of and oxidation of hydrogenated polybutadiene diol with)
- IT 9003-17-2  
 RL: USES (Uses)  
 (rubber, hydroxy-terminated, oxidation of, in presence of nitroxyl radical and iron or copper)
- IT 29464-22-0, (p-Chloromethyl)styrene-styrene copolymer  
 RL: USES (Uses)  
 (supports, for hydroxytetramethylpiperidineoxyl catalysts, for oxidation of polymeric terminal diols)
- OSC.G 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)

L32 ANSWER 6 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 1992:236311 HCAPLUS Full-text  
 DN 116:236311  
 OREF 116:40061a,40064a  
 TI Efficient and selective oxidation of a polymeric terminal diol with copper(II) mediated by nitroxyl radical  
 AU Yoshida, Eri; Takata, Toshikazu; Endo, Takeshi  
 CS Res. Lab. Resourc. Util., Tokyo Inst. Technol., Yokohama, 227, Japan  
 SO Journal of Polymer Science, Part A: Polymer Chemistry (1992), 30(6), 1193-7  
 CODEN: JPACEC; ISSN: 0887-624X

DT Journal  
 LA English  
 AB 4-Methoxy-2,2,6,6-tetramethylpiperidin-1-oxyl and 1-oxo-4-methoxy-2,2,6,6-tetramethylpiperidinium chloride were effective catalysts for the oxidation of hydroxy groups of hydroxy-terminated hydrogenated polybutadiene with  $\text{Cu}(\text{ClO}_4)_2$ ,  $\text{CuCl}_2$ ,  $\text{CuBr}_2$ , or  $\text{Cu}(\text{NO}_3)_2$ . The catalysts were not effective with  $\text{Cu}(\text{OH})_2$ ,  $\text{CuSO}_4$ , or  $\text{Cu}(\text{OAc})_2$ .  
 IT 95407-70-8  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, for oxidation of hydroxy-terminated hydrogenated polybutadiene with copper salt)  
 RN 95407-70-8 HCAPLUS  
 CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-, 1-oxide chloride (1:1)  
 (CA INDEX NAME)



●  $\text{Cl}^-$

CC 35-8 (Chemistry of Synthetic High Polymers)  
 IT 95407-69-5 95407-70-8  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, for oxidation of hydroxy-terminated hydrogenated polybutadiene with copper salt)  
 L32 ANSWER 7 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 1988:120887 HCAPLUS Full-text  
 DN 108:120887  
 OREF 108:19675a,19678a  
 TI Electrochemical oxidation of carbinols mediated by nitroxyl radicals in solution or bonded to polypyrrolic coatings on platinum and carbon electrodes  
 AU Deronzier, Alain; Limosin, Daniele; Moutet, Jean Claude  
 CS Lab. Electrochim. Org. Photochim. Redox, Univ. Sci. Technol. Med. Grenoble, Saint Martin d'Heres, 38402, Fr.  
 SO Electrochimica Acta (1987), 32(11), 1643-7

CODEN: ELCAAV; ISSN: 0013-4686

DT Journal

LA English

AB Electrochem. oxidation of carbinols mediated by the 2,2,5,5-tetramethyl-3-pyrrolin-1-oxyl, via its nitrosonium ion, were investigated. Studies were carried out with the mediator either in solution or deposited in a film form at the surface of an electrode by **electropolymn.** of a monomer containing pyrrole groups covalently bonded to the **nitroxyl** moiety.

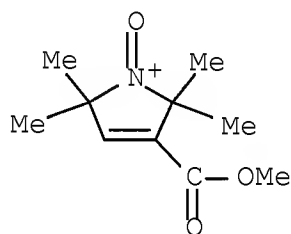
IT 46247-55-6

RL: PRP (Properties)

(electrooxidn. of methoxybenzyl alc. in presence of)

RN 46247-55-6 HCAPLUS

CN 1H-Pyrrolium, 2,5-dihydro-3-(methoxycarbonyl)-2,2,5,5-tetramethyl-1-oxo- (9CI) (CA INDEX NAME)



CC 72-2 (Electrochemistry)

Section cross-reference(s): 22, 25

IT Oxidation, electrochemical

(of carbinols, mediated by **nitroxyl** radicals in solution or bonded to polypyrrolic coatings on platinum and carbon electrodes)

IT 46247-55-6 101966-15-8

RL: PRP (Properties)

(electrooxidn. of methoxybenzyl alc. in presence of)

IT 101966-14-7

RL: RCT (Reactant); RACT (Reactant or reagent)

(**polymerization** of, electrochem., on platinum or glassy carbon electrodes, for oxidation of carbinols)

OSC.G 29 THERE ARE 29 CAPLUS RECORDS THAT CITE THIS RECORD (29 CITINGS)

L32 ANSWER 8 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1980:163248 HCAPLUS Full-text

DN 92:163248

OREF 92:26453a,26456a

TI Determination of components of g- and A-tensors and rotational mobility of nitroxyl radicals by the 2-MM EPR spectroscopic method

AU Grinberg, O. Ya.; Dadali, A. A.; Dubinskii, A. A.; Vasserman, A. M.; Buchachenko, A. L.; Lebedev, Ya. S.

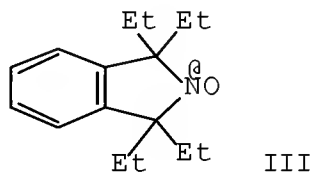
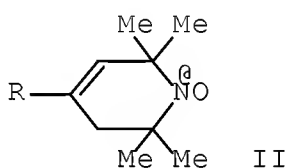
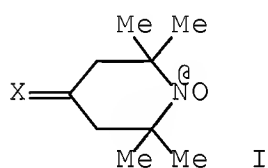
CS Inst. Khim. Fiz., Moscow, USSR

SO Teoreticheskaya i Eksperimental'naya Khimiya (1979), 15(5), 583-8  
CODEN: TEKHA4; ISSN: 0497-2627

DT Journal

LA Russian

GI



AB The g- and A-tensor components were determined for I (X = H<sub>2</sub>, O), II (R = Ph, PhC.tplbond.C, PhC.tplbond.CC.tplbond.C), and III in natural rubber and toluene matrixes. To determine rotational correlation times in the 4 + 10<sup>-12</sup> to 6 + 10<sup>-11</sup> s range the mm ESR region must be used. For 6 + 10<sup>-11</sup> to 3 + 10<sup>-10</sup> s times both the 2 mm and 3 cm regions are convenient; for times >3 + 10<sup>-10</sup> s the 3 cm region is more convenient. The use of correlation times in spin probe studies of mol. dynamics in nonviscous liqs. and dilute polymer solns. may be possible.

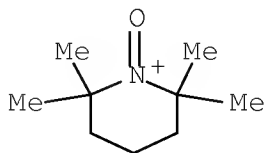
IT 45842-10-2

RL: PRP (Properties)

(ESR tensor components of)

RN 45842-10-2 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo- (CA INDEX NAME)



CC 22-2 (Physical Organic Chemistry)  
Section cross-reference(s): 68  
ST nitroxyl ESR tensor rotation; rotation nitroxyl  
correlation time  
IT Spin, electronic  
(correlation of, in nitroxyl radicals)  
IT Molecular rotation  
(of nitroxyl radical, ESR in relation to)  
IT Electron spin resonance  
(of nitroxyl radicals, tensor components in)  
IT 22104-03-6 45842-10-2 69116-03-6 69116-04-7  
69116-09-2  
RL: PRP (Properties)  
(ESR tensor components of)  
OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1  
CITINGS)

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